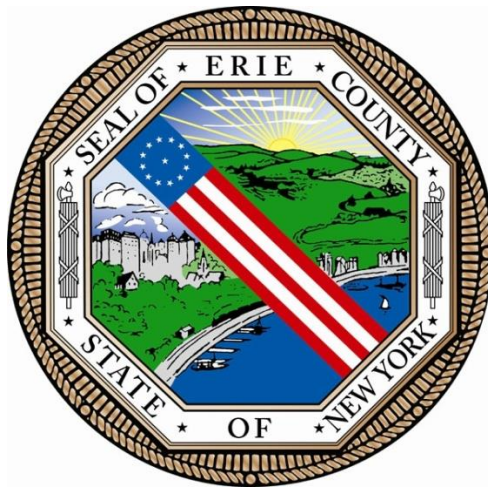


**December 2016**

**The Department of Public Works  
Performance Audit of  
Emergency and Standby Power Systems  
For the Period July 1<sup>st</sup>, 2015 through June 30<sup>th</sup>, 2016**



**STEFAN I. MYCHAJLIW  
ERIE COUNTY COMPTROLLER**

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**HON. STEFAN I. MYCHAJLIW  
ERIE COUNTY COMPTROLLER'S OFFICE  
DIVISION OF AUDIT & CONTROL  
95 FRANKLIN STREET  
BUFFALO, NEW YORK 14202**



December 21, 2016

Erie County Legislature  
92 Franklin Street 4<sup>th</sup> Floor  
Buffalo, New York 14202

Dear Honorable Members:

The Erie County Comptroller's Office has completed an audit of the Emergency Standby Power Systems (ESPS) for the period July 1<sup>st</sup>, 2015 through June 30<sup>th</sup>, 2016.

We conducted our audit in accordance with Generally Accepted Government Auditing Standards. These standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained during the audit provides a reasonable basis for our findings and conclusions based on our audit objectives.

Our objectives were to assess the adequacy of the maintenance and testing of generators located within buildings under the auspices of the Erie County Department of Public Works (DPW). Further, we wanted to determine whether control procedures are in place and operating effectively; that emergency and standby power systems are maintained in accordance with applicable standards; and that records of inspection, testing, and maintenance of emergency and standby power systems are comprehensive in nature with respect to building codes.

The scope of our audit included tests of maintenance records and logs, staff interviews, and site visits. This audit also included an evaluation of internal controls over the maintenance and testing of the building generators.

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## Executive Summary

We noted two significant instances regarding lack of current written policies and procedures and non-compliance with standards.

1. There were inconsistencies in the preparation and retention of generator operation and testing reports at the various county buildings. This was due to the lack of current written procedures and the failure of management to monitor for adequacy and consistency.
2. Detailed testing records are not maintained by the Chief Stationary Engineers as required by National Fire Protection Association (NFPA) Standards. Such non-compliance was again the result of the failure by management to monitor adherence and the absence of current written operating procedures.

We found a minor issue of non-compliance with the Erie County Administrative Code in that DPW did not formally delegate the inspection and enforcement of the New York State Uniform Fire Prevention and Building Code to the Division of Sewerage Management (DSM).

Specific detail of the above noted findings may be found in the report section entitled – **AUDIT FINDINGS AND RECOMMENDATIONS**.

## Background

Article 11, Section 1102 (d) of the Erie County Charter states that the Commissioner of the Department of Public Works shall “Exercise all the powers and duties of administration and enforcement of the uniform fire prevention and building code pursuant to article eighteen of the executive law with respect to any and all buildings owned by the county of Erie.”

These emergency and standby power systems, or generators as they are more commonly known, are designed to provide an alternative source of power if the normal source of power, most often the serving utility, should fail. As such, reliability of these types of systems is critical and good design practices are essential. The Chief Stationary Engineers at each building location are responsible for running the generators on a weekly basis, performing visual inspections, monitoring fuel levels and maintaining logs to note the activities performed.

To supplement ESPS maintenance, Erie County has contracted with Siemens Industry Inc. to “perform regularly scheduled maintenances and inspections of Emergency Power Generators”. Siemens performs this service semi-annually. The contract specifies what is expected of Siemens, but the contract does not cover maintenance per NFPA standards. Therefore outside of this contract, there are still maintenance and inspection tasks to be completed by the Chief Stationary Engineers in order to comply with NFPA. This includes weekly and monthly generator maintenance and testing.

Other standards that DPW and the Commissioner of the Department of Public Works should adhere to include:

- NYS Executive Law- Article 18, 377
- Title 19 New York Codes, Rule and Regulations (“NYCRR”)- Chapter XXXIII Sub-Chapter A Part 1221
- 2015 International Fire Code- Chapter 6 604.4
- National Fire Protection Association (“NFPA 110”)- Standard for Emergency and Standby Power Systems
- National Fire Protection Association (“NFPA 111”)- Standard on Stored Electrical Energy Emergency and Standby Power Systems

## **Audit Findings and Recommendations**

### **1. LACK OF WRITTEN PROCEDURES**

Good business practice suggests that written policies and procedures be in place to provide operational guidelines for employees. Such formalized guidelines help to provide reasonable assurance that management's directives are followed and that operational reports are prepared in a consistent manner.

DPW does not have current policies and procedures in place detailing how the building generators should be maintained and periodically run with or without load. Further there are no current procedures available requiring that logs of such activity be prepared and retained. As many of these generators have been in place for several decades, it is imperative to have appropriate procedures in place to ensure the integrity and longevity of these systems through a regular schedule of maintenance.

WE RECOMMEND that Management of DPW take the steps necessary to formally prepare current policies and procedures that detail specific actions necessary for the stationary engineers to upkeep the generators and transfer switches. These policies and procedures should also include instructions regarding the retention of operating and testing logs.

### **2. NONCOMPLIANCE WITH NFPA STANDARDS**

The NFPA Standard 110, Chapter 8, clearly defines the requirements of proper ESPS maintenance and operating log management. These requirements include preparing detailed reports establishing that generators were inspected weekly and exercised under load at least monthly; that records be created and maintained for all inspections, operations tests, exercising, repairs, and modifications; and that a written schedule for routine maintenance and operational testing of the ESPS shall be established.

Countywide, there are 35 generators maintained by DPW at 29 locations. We tested a representative sample of maintenance records for 13 generators from 8 locations and found that the NFPA standards generally were not met. We received reports for only 5 of the 13 generators in our sample and only three of these reports met NFPA standards.

Because of the significant importance to maintain normal operation of a facility in the event of an emergency, WE RECOMMEND that DPW include in their written policies and procedures

appropriate NFPA standard guidelines to include at a minimum a schedule and maintenance log that can be followed to ensure the proper upkeep of an ESPS.

### **3. NON-COMPLIANCE WITH THE ERIE COUNTY ADMINISTRATIVE CODE**

Article 10, Section 10.02(f) states that “The commissioner may delegate the inspection and enforcement of the New York State Uniform Fire Prevention and Building Codes to deputies and employees within the department, and by rule may delegate such powers to licensed professional engineers with the division of sewerage management in the department of environment and planning.” We were unable to locate documentation that DPW had formally delegated these responsibilities to the Erie County DSM. While the obligation for official delegation has been overlooked, the responsibilities have been assumed by DSM.

WE RECOMMEND that Management of DPW take the steps necessary to formally delegate the inspection and enforcement responsibilities for the DSM buildings to the licensed professional engineers within DSM. Further, we recommend that management of DPW take the steps necessary to modify the Erie County Administrative Code to specifically define the responsibilities delegated to the DSM.

### **Opinion**

Management of DPW is responsible for establishing and maintaining a system of internal control. The objective of such a system is to provide reasonable, but not absolute, assurance that transactions are executed in accordance with management’s authorization and are properly recorded. Because of inherent limitations in the system of internal control, errors or irregularities may nevertheless occur and not be detected.

During the course of our audit, concerns regarding internal controls became apparent through both our walkthroughs and evaluation of documentation. We found deficiencies as follows: (1) Lack of current written policies and procedures, and (2) Inconsistent preparation and retention of maintenance and operation reports. Thus, in our opinion, controls are not adequate to ensure compliance with either management’s directives or NFPA standards.

## Auditor Comments

### 1. Lack of Dedicated ESPS Space

Space should be dedicated in the ESPS room for manuals, logs, and small replacement parts. In our site visits, we noted that the availability and location of paperwork regarding ESPS systems varied from site to site and that none of the sites had all of the operation and maintenance detail readily adjacent to the ESPS. According to NFPA 110 8.2.1, at least two sets of instruction manuals for all major components of the ESPS shall be supplied by the manufacturer of the ESPS and shall contain the following:

1	A detailed explanation of the operation of the system.
2	Instructions for routine maintenance.
3	Detailed instructions for repair of the ESPS and other major components of the ESPS.
4	An illustrated parts list and part numbers.
5	Illustrated and schematic drawings of electrical wiring systems, including operating and safety devices, control panels, instrumentation and annunciators.

According to NFPA 110 8.2.4, "Replacement for parts identified by experience as high mortality items shall be maintained in a secure location on the premises." As well, "[C]onsideration shall be given to stocking spare parts as recommended by the manufacturer."

WE RECOMMEND that components be readily available in an accessible location to properly troubleshoot, monitor, and repair ESPS systems. A centralized and dedicated location will remove the confusion of where and how important materials are retained for each location's ESPS.

Further NFPA 110 A.8.3.2 suggests;

"Where adequately secured from public access, it is desirable to locate an instruction manual, special tools and testing devices, and spare parts in the room in which the ESPS is located. The articles should be mounted at a convenient location on a wall and should be enclosed in a metal or other suitable cabinet. The cabinet should accommodate the instruction manual on the inside of the door."



## **2. Aging ESPS Units**

Our testing disclosed that there are ESPS units that have been in service for over 40 years and are coming to the point where repeated routine repair may warrant the consideration of replacement due to the age of the unit and the ongoing cost/benefit of the repairs. The average age of the generators in our sample was 25 years with the oldest being 40 years and the newest being 12 years. For example, the generator that services the Erie County Rath Building is located in the garage under the building. On 4/16/2015, Siemens performed a semi-annual service. The technician's notes read, "Louvers are inoperable. Radiator and ducting exposed to a lot of salt. Radiator tanks are rusted pretty bad but not leaking at this time". The generator was serviced again (by Siemens) on 10/21/2015, the technicians' notes read, "Louvers are not working and wedged open. Radiator tanks have considerable rust buildup from exposure to salt but no leaks". On a 10/24/2016 site visit by the auditors to see the generator and review the status of the system, the louvers as noted by Siemens were significantly deteriorated. Beyond the noted inefficiencies, one could also place their hand through rusted and crumbling sheet metal.

Because the reliability of ESPS is so significant in the event of a power outage and in order to minimize the risk of a failed system, WE RECOMMEND that DPW perform an analysis of their existing generators to determine the feasibility of continued maintenance of outdated and deteriorating generators versus replacement.

## Results of Exit Conference

On January 24, 2017, an exit conference was held with the Commissioner of the Department of Public Works and two members of his staff. We discussed the contents of the report and the auditee was in general agreement with our findings and recommendations.

Prior to the release of this report the Department of Public Works prepared a written response which we have included in Annex A.

We wish to thank the Commissioner and his office for their assistance afforded our audit staff during the course of the audit.

## ERIE COUNTY COMPTROLLER'S OFFICE

cc: John C. Loffredo, Commissioner, Department of Public Works  
Hon. Mark C. Poloncarz, County Executive  
Robert W. Keating, Director, Budget and Management  
Erie County Fiscal Stability Authority

## Annex A – DPW Response



January 25, 2017

## COUNTY OF ERIE

Honorable Members  
Erie County Legislature  
92 Franklin Street  
Buffalo, NY 14202

**MARK C. POLONCARZ**  
COUNTY EXECUTIVE

Re: Response to Comptroller Audit of Emergency and Standby Power Systems  
For the Period July 1, 2015 through June 30, 2016

Dear Honorable Legislature:

This memo is in response to the performance audit entitled "Emergency and Standby Power Systems", for the period July 1, 2015, through June 30, 2016, conducted by the Erie County Comptroller. The audit findings were detailed in a draft report submitted to the Commissioner of the Department of Public Works ("DPW") on January 20, 2017.

DPW would like to thank the Comptroller for conducting this audit, and for including this response as an attachment to the final audit report.

DPW recognizes that internal audits, properly planned and conducted, may highlight opportunities for improvement. As a result of this audit, DPW has initiated corrective action to improve internal controls governing the maintenance and testing of emergency power systems.

DPW's response to each finding in the audit report includes the finding title, as stated in the audit report, DPW's statement of agreement or disagreement with the finding, and a statement of corrective action, if applicable, planned by DPW.

### **DPW Response to Audit Findings:**

#### **1. Lack of Written Procedures:**

- a. **DPW Response:** DPW is in general agreement with the finding. DPW has outdated procedures in this area. However, DPW does contract with a third party on an annual basis to provide maintenance and repair services for generators in County-owned buildings.
- b. **DPW Corrective Action:** DPW will prepare updated policies and procedures for the maintenance and load-testing of building generators. The procedures will include a requirement to record activities in logs which will be retained for reference purposes. This task has been assigned to the Deputy Commissioner of the Division of Buildings and Grounds.

Rath Building, 92 Franklin Street, Buffalo, NY 14202, Phone: 1-716-858-6006, Fax: 1-716-858-6303, Email: [info@erie.gov](mailto:info@erie.gov)

**2. Non-Compliance with NFPA Standards:**

- a. DPW Response: DPW is in general agreement with the finding. DPW has outdated procedures in this area. However, DPW does perform some testing of generators and contracts with a third party on an annual basis to provide maintenance and repair services for generators in County-owned buildings.
- b. DPW Corrective Action: DPW will prepare updated policies and procedures for the testing of building generators, in accordance with the requirements of NFPA standard 110. The procedures will include a requirement to record activities in logs which will be retained for reference purposes. This task has been assigned to the Deputy Commissioner of the Division of Buildings and Grounds.

**3. Non-Compliance with the Erie County Administrative Code:**

- a. DPW Response: DPW does not agree with the finding. The Division of Sewerage Management ("DSM") has assumed the responsibility of maintaining its own generators. This practice does conflict with the Erie County Administrative Code ("Code"). However, from a practical standpoint, the current practice is functioning well and is acceptable to both DPW and DSM.
- b. DPW Corrective Action: DPW, in conjunction with DSM, will suggest that the Code be modified to define DSM as the department responsible for maintenance and code enforcement of its own generators.

**DPW Response to Auditor Comments:**

DPW will consider all comments presented in the audit report, and identify and implement process improvements where appropriate. In addition, DPW will take any action deemed necessary and feasible related to valid concerns identified in the "Auditor Comments" section.

Thank you for the opportunity to respond to the audit report. We look forward to meeting with you in order to discuss any questions related to this response to the audit report.

Sincerely,

John C. Loffredo  
Commissioner, Department of Public Works



Cc: Mark Poloncarz, County Executive  
Stefan Mychajliw, Comptroller  
Robert Keating, Director, Division of Budget and Management